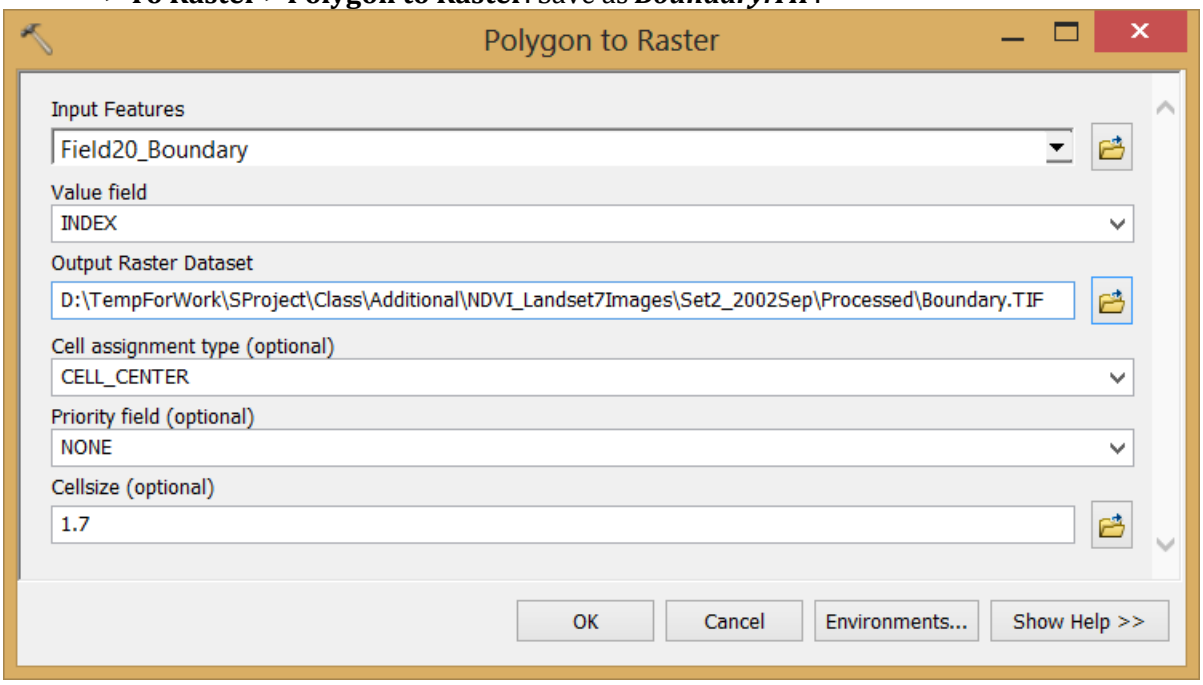
Tutorial Set 4: Remote sensing

Exercise Site20_4-2 NDVI calculation

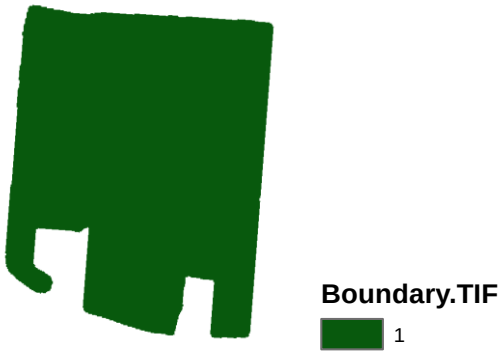
Learning objective: Calculating NDVI using band RED and band NIR
Techniques: Use the Raster Calculator to clip and compose a new image
Data Source: Dataset5

Part 1: Clipping images to site boundary

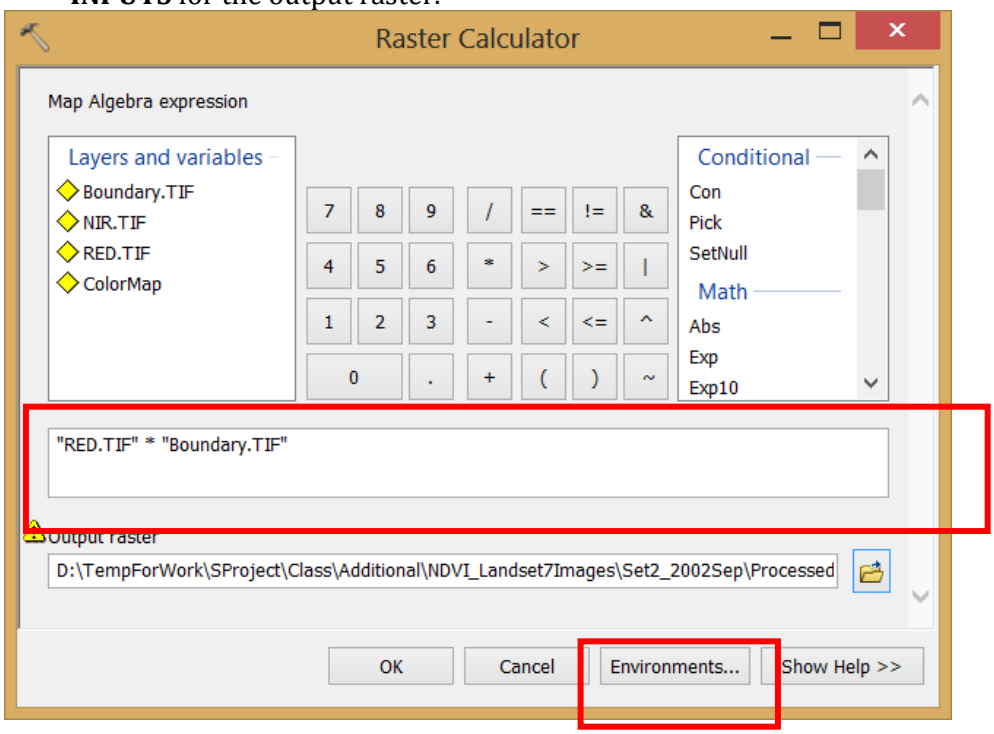
1. Convert ***Field20_Boundary.shp*** (vector) to a raster. Go to **ArcToolbox > Conversion Tools > To Raster > Polygon to Raster**. Save as ***Boundary.TIF***.

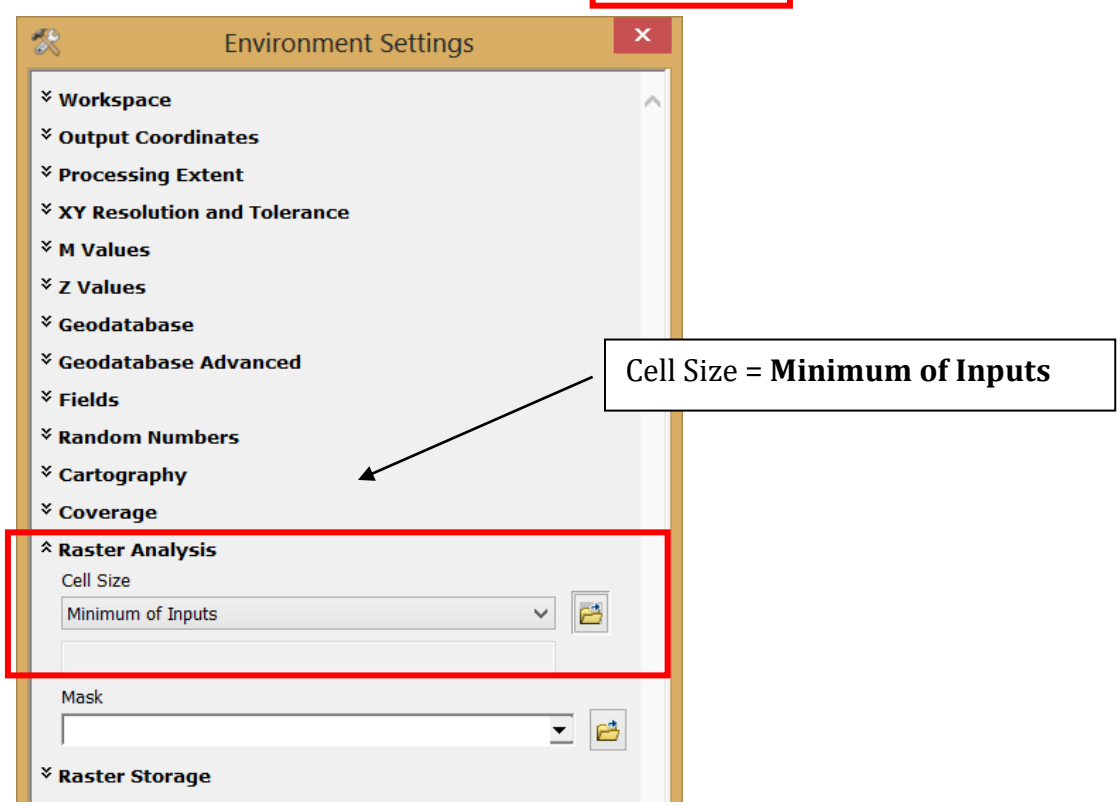


2. Result of Boundary.TIF

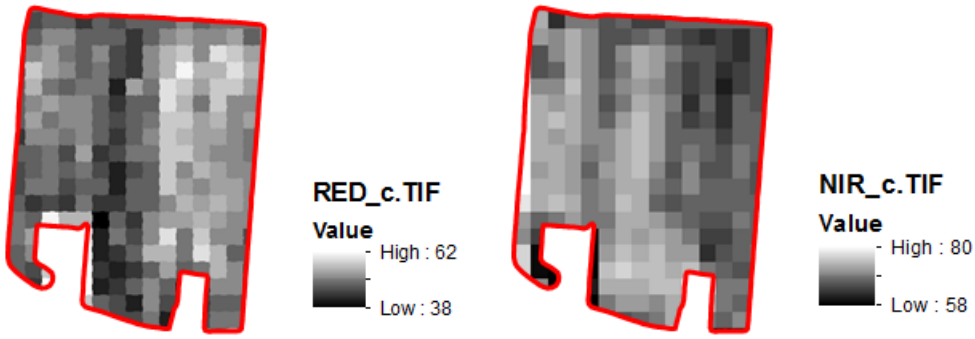


3. Clip ***RED.TIF*** and ***RED.TIF*** to the boundary of ***Boundary.TIF***. Go to **Spatial Analyst Tools** > **Map Algebra** > **Raster Calculator**.
   Algebra expression = **RED.TIF * Boundary.TIF**
   Output raster = **RED_c.TIF**
   Click **Environment Setting** to change **Raster Analysis>cell size** = **MINIMUM of INPUTS** for the output raster.





4. Repeat previous step (3) to clip ***NIR.TIF***.
5. Results of the clipped images: ***RED_c.TIF*** and ***NIR_c.TIF***.



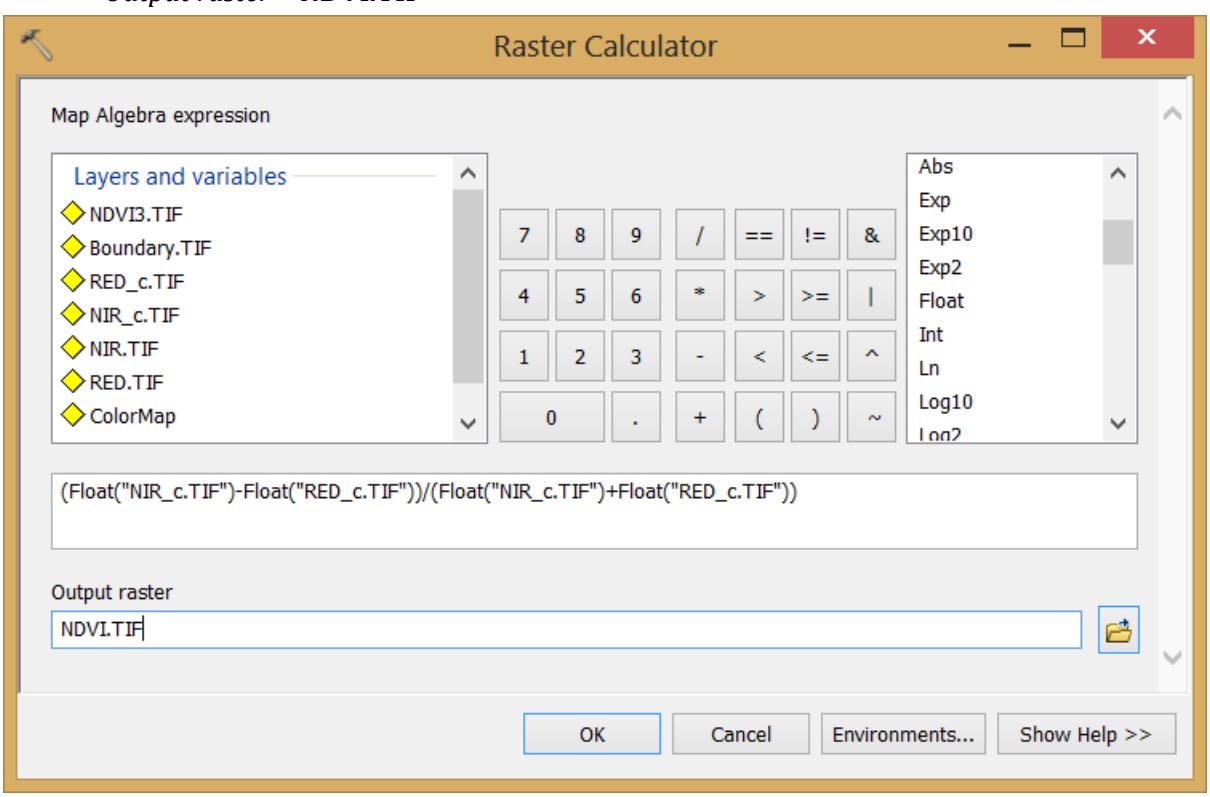
Part 2: Calculating NDVI

$$\text{NDVI} = \frac{(\text{NIR} - \text{Red})}{(\text{NIR} + \text{Red})}$$

1. Go to **ArcToolbox** > **Spatial Analyst Tools** > **Map Algebra** > **Raster Calculator**

   Algebra expression =
   (Float("NIR_c.TIF")-Float("RED_c.TIF")/(Float("NIR_c.TIF")+Float("RED_c.TIF"))

   Output raster = **NDVI.TIF**



2. Result of NDVI image.